Amendments to the Specification:

Please amend the specification as follows:

Please delete paragraph number **[0058]** on page 17, and replace it with the following paragraph:

[0058] Several different DNA oligonucleotides were used in these experiments. To optimize the DNA-SWNT linkage chemistry, a 32-base oligonucleotide (5'-HS-C_6H_{12}-T_{15}GC TTA ACG AGC AAT CGT FAM-3') **(SEQ ID NO: 1)** ("S1") was used. This oligonucleotide was modified at the 5' end using the reagent 5'-thiol modifier C6 (Glen Research, Sterling, VA) to give a thiol group for attachment to the maleimide group on the nanotubes (FIG. 1d), and was modified at the 3' end using 6-FAM amidite (Applied Biosystems, Foster City, CA) to attach a fluorescein group.

Please delete paragraph number **[0060]** on page 17, and replace it with the following paragraph:

[0060] Since the above experiment proved that the DNA-SWNT adducts are stable, further experiments were conducted to test whether the DNA molecules that are tethered to the SWNTs remain biochemically accessible to hybridization, and whether the attachment to the nanotubes significantly impacts the selectivity for hybridization with complementary vs. non-complementary sequences. For these experiments, DNA without a fluorescent tag was linked to the nanotubes, and the hybridization of these DNA-SWNT adducts with fluorescently-tagged complementary and non-complementary sequences of DNA in solution was investigated. These experiments were conducted using the oligonucleotide "S2", with the sequence (5'-HS-C_6H_{12}-T_{15}GC TTA ACG AGC AAT CG –3') **(SEQ ID NO: 2)**, linked to the nanotubes. After immobilization onto the SWNTs following the procedures above, the resulting DNA-nanotube adduct was then portioned into two aliquots, and each was immersed in a 5 micromolar solution of DNA oligonucleotides that were labeled at the 5' end with fluorescein. The first sequence, "S3", (5'- FAM- CG ATT GCT CGT TAA GC –3') **(SEQ ID NO: 3)**, has sixteen bases complementary to S2. The second sequence, "S4", consists of the 16-base sequence (5'-FAM-

CG TTT GCA CGT TTA CC –3') **(SEQ ID NO: 4)** that has four-base mismatch to S2. Each sample was hybridized for 2 hours at 37 °C with shaking, washed using a 0.2 micron polycarbonate membrane with SDS/2xSSPE buffer, and then placed in a 96 well microtiter plate in buffer. FIG. 2 shows the resulting fluorescence image of this experiment. The top row shows the fluorescence images (black = high intensity; white = low or no intensity) for hybridization of S2-SWNT with its complement, S3 (left) and with the 4-base mismatch, S4 (middle). The image at right shows the background from an empty titerplate well. Measurement of the fluorescence intensity within each well yields a median value of 1287 I.U. for the perfect match (left), 680 I.U. for the mismatch (middle) and 427 I.U. for the background. Since there is a much higher intensity from the perfect-matched pair (S2-SWNT + S3) than the mismatched pair (S2-SWNT + S4), we conclude that hybridization of the DNA-SWNT adducts with solution-phase oligonucleotides is highly specific.